FORCEnet engineering conference

November 15 -17, 2005: Town & Country Convention Center - San Diego, Calif.

EXCOMM Network Study

Afloat Networks Track

Space and Naval Warfare Systems Command

November 16, 2005

Sponsored by
SPAWARSYSCOM
FORCEnet Chief Engineer
By John M. Hong

SPAWAR

Networks Study

- **Purpose:**
  - Need for a Coherent & Comprehensive Enterprise Strategy for Afloat Networks
    - Examples:
      - Platform Network Diversity
        - » Across Platforms / Within Class.
        - » Across Classes of Ships.
  - Coordinated with: PEOs, DASNs, NETWARCOM, MCSC, and the Operational Fleet.

- **Why is it important to FORCEnet:**
  - A primary requirement for FORCEnet is the discovery of and cooperation among services that are created by disparate organizations and fielded at different times. This is not achievable if the networks aren't interoperable, the bridging dynamic, and Quality-of-Service (QoS) defined.

EXCOMM Actions 2005

- Our initial study focused on DDGs (Secret-GENSER security enclave only) was presented to both the Virtual SYSCOM Level 1, Level 2, and the FORCEnet EXCOMM in May 2005. Positively received.
- Action (5) from **FORCEnet EXCOMM Minutes**, dtd 7 Sep 2005:

→ **Conduct a study of an existing shipboard network topology and use the resultant findings as possible recommendations to support other programs.**

→ **Consider the use of a pilot approach so as not to make the study overly complex.**

Status of SPAWAR's Study (Paper)

- **Charter:** Released to both Virtual SYSCOM Level 1 and Level 2 for comments. Charter signed by SPAWAR 05 on 25 Oct 2005.
- **MOA:** Draft MOA released to PEO Ships, PEO C4I & Space, and PEO IWS. MOA delineates the expectations from each organization.
  - Other MOAs will be assembled as needed.
- **Ship:** Currently selected LHD-5 and –7 for "as-is" ship.
- **Study Whitepaper:** Whitepaper will be assembled with finding results. Coordinated with Network Consolidation Study IPT **(NCSIPT).**
- **NCSIPT:** Core Team Organization and Core Advisors
- **M&S:** SSC CHS is leading the M&S effort
  - Funding document sent in mid-September
  - Using the OPNET Network Tool
  - Analysis of Results.

Status of EXCOMM Study (Technical)

- **NCSIPT** will be established to examine recent technical approaches, such as TSCEI and SWAN.
  - Find efficiencies and processes that can be applied to all LHAs, and eventually, all afloat platforms.
  - In concert with the stakeholders, IPT will pursue standardizations and improvements of established processes.
  - IPT will focus on items that could potentially influence future ACAT I platform acquisition efforts such as CVN 21, LHA(R), and LPD-17.
  - Provide Trade Space for ASN(RDA)
  - Currently, we have met with DD(X) Program, PEO IWS 1.0, PEO Ships, MCSC, etc…
  - Study will result in whitepaper in addition to M&S.
  - Pursuing an “Innovation Laboratory” to have measured data in addition to calculated results from M&S.

Qualities Under Evaluation (example)

- **Security**
  - Separate Enclaves vs. Separate Fiber vs MLS
- **Quality of Service (QoS)**
  - Mixing high-throughput and low-latency applications
  - Capacity
- **Availability / Supportability**
  - MTBF
  - MTTR

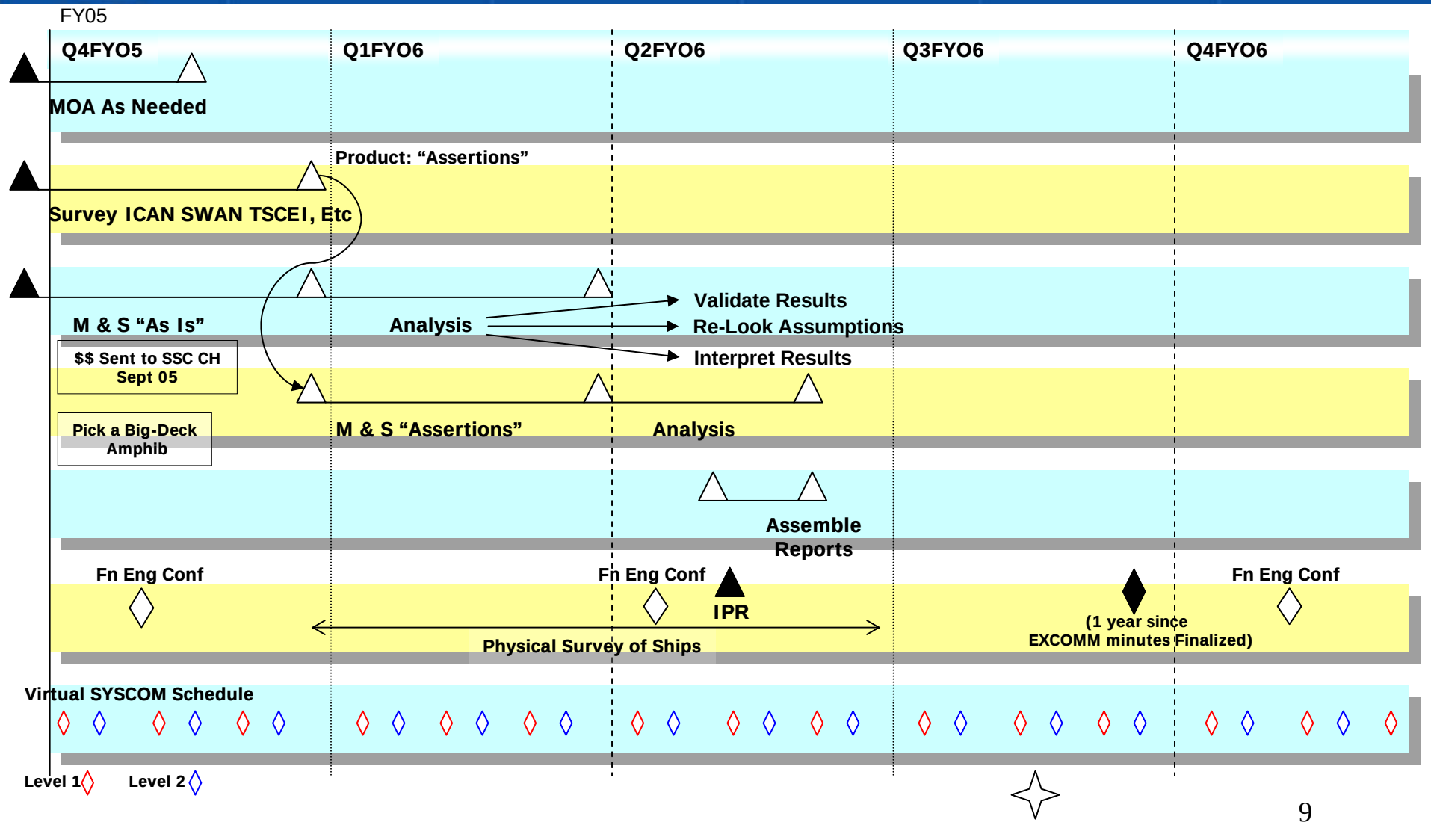
SPAWAR ⇔ PMW 160's Study

- Two major studies underway in the network consolidation area.
  - **SPAWAR 05's EXCOMM Network Study #2, focusing on large-deck amphibious assault ships.** Result is whitepaper dealing with trade-spaces in support of future acquisitions (e.g. consequences of pushing to shared fiber)
  - **PMW 160's "Network Rationalization" Study**
    - Technical look at the network's "roadmap" and the "as-is" afloat networks.
    - Study will include a review of DoD, Joint and Allied Requirements.

PMW 160's studies are focused on enterprise-wide solutions,
SPAWAR 05's focus is on consequences of network consolidation related to acquisition and on Large-Deck Amphibious Assault Ships

BACK UP

POA&M


FY05
Q4FYO5
Q1FYO6
Q2FYO6
Q3FYO6
Q4FYO6
MOA As Needed
Product: "Assertions"
Survey ICAN SWAN TSCEI, Etc
M & S "As Is"
Analysis
Validate Results
Re-Look Assumptions
Interpret Results
$$ Sent to SSC CH Sept 05
Pick a Big-Deck Amphib
M & S "Assertions"
Analysis
Assemble Reports
Fn Eng Conf
Fn Eng Conf
IPR
Fn Eng Conf
(1 year since EXCOMM minutes Finalized)
Physical Survey of Ships
Virtual SYSCOM Schedule
Level 1
Level 2
Fn EXCOMM

Network Consolidation Study
SCN Ship Design Target Dates

Platform	Design Target Dates	Funding Type	Comments	Ship Platform POCs
CVN 21	FY05-FY11	SCN	Install 2013. Ship Deploy 2015	**PMW 750**
CG (x)	FY05-FY13	SCN	PEO C4I Full Integration. GFE turn-key Solution. Ship deliver 2018 or 2015 decision soon.	**PMW 760**
DD (x)	TBD	SCN	FSC (Full Service Contractor) Raytheon/NG - Unique case	**PMW 760**
LHA 6	FY05-FY09	SCN	Ship Delivery 2012	**PMW 760**
LHA 7	FY05-FY12	SCN	Ship Delivery 2015	**PMW 760**
LHD 8	FY05 Only	SCN	Ship Deliver 2006-2007	**PMW 760**
LPD - 22 & on	FY06 & on-	SCN	PMS 312 funding PMW 160 to look at designs to integrate ISNS into GIG-E. DEC 05 Design Review.	**PMW 760**

10-28-05

Networks Support the Future?

- New-Generation of Internet Technologies (i.e. Web 2.0)
  - Built around web services, leaders are Google, Yahhoo!, Salesforce.com, Writely.com, and Numsum.com
  - At recent annoucement, Microsoft proclaimed the era of “live software” and their most important net strategy since the old browser wars.
  - Defense Department’s Net-Centric approach to warfighting. Leaders include:
    - Navy’s Forcenet Services Infrastructure (Distributed Services)
    - DISA’s Global Information GRID
    - Navy’s C4ISR Web Services (CWS)
    - Army’s Publish and Subscribe System (PASS)

EXCOMM Minutes
7 September 2005

THE ASSISTANT SECRETARY OF THE NAVY
Research Development and Acquisition
1000 Navy Pentagon
Washington DC 20350-1000

SEP 07 2005

MEMORANDUM FOR DISTRIBUTION

SUBJECT: Summary of 17 May 2005 FORCEnet Executive Committee (FORCEnet EXCOMM)

On Tuesday, 17 May 2005, I hosted the fourth FORCEnet Executive Committee (FORCEnet EXCOMM) meeting at the Pentagon. This FORCEnet EXCOMM brought together Department of Navy (DON) leadership to examine selected aspects of Naval progress toward achievement of Net Centric Warfare capabilities. A list of attendees is attached as Tab A.

Three major topics were discussed at this session:

- Global Governance Synchronization
- Shipboard Networks Study
- Software Trouble Reports (STRs).

FORCEnet drives the Sea Strike, Base, Shield, Enterprise, and Warrior pillars, encompassing warfighting support and business systems. Each pillar is owned and managed by different resource sponsors. The Triad of warfighting requirements generators, resource sponsors, and acquisition providers has made progress connecting the N6/N7 pillars of Sea Strike, Sea Base, and Sea Shield. Opportunities exist for inclusion of the N1 and N4 pillars (Sea Warrior and Sea Enterprise). Efforts to take advantage of these opportunities are being addressed by Assistant Chief of Naval Operations for Information Technology (ACNO (IT)). Work remains to ensure appropriate coordination of FORCEnet and Naval Open Architecture efforts.

The recent Sponsor Program Proposal for PR-07 aligns a significant amount of resources to accelerate FORCEnet capabilities, however, there appears to be a gap between the Sponsor Program Proposal Capabilities and near-term acquisition plans that should provide the path to that future capability. It is the responsibility of the acquisition community to improve alignment of near-term planning to achieve the Navy's long-term goal for a seamlessly netted force. We need to ensure that what is planned becomes available to the warfighter and that there is a flow-down of FORCEnet requirements into current acquisition contract language to bridge any gaps.

The FORCEnet EXCOMM will ensure Tier 1 Governance synchronization within the Triad. Speed and agility is determined by how fast and flexible the Triad can work

Network Consolidation Study Charter

Space and Naval Warfare Systems Command
Office of the Chief Engineer
San Diego, California

CHARTER

Network Consolidation Study IPT (NCSIPT)

1.0 Purpose:
This charter establishes the goals, roles and responsibilities, approach, and constructs of a new network consolidation effort. An NCSIPT will be assembled consisting of members from the technical, operational and acquisition communities. The new network consolidation study, as directed by ASN(RDA), will focus on LHA/D class (big deck) amphibious assault ships.

2.0 Mission (Strategic Goal):
The mission of the NCSIPT is **the development, standardization and improvement of** network consolidation **processes in concert with the network stakeholders**.

Initially the NCSIPT will focus on surveying past and ongoing network consolidation efforts within the operational fleet. As ASN (RDA) indicated at the May 2005 FORCEnet EXCOMM, the IPT should focus on items that could potentially influence future acquisition efforts such as CVN 21, LHA(R), and LPD 17. The NCSIPT will evaluate successful processes established during previous network engineering efforts, for example:

a. TSCEI (DDX),
b. ICAN (CVN-76)
c. SWAN (LPD-17)
d. Network Study completed for the 17 May 05 FORCEnet EXCOMM
e. NIIN IPT
f. PEO AIRCRAFT CARRIERS, Aircraft Carrier Networks Acquisition and Implementation Policy, PEOCARRIERSINST 2710.1

3.0 Strategic and Tactical Objectives:

a. Identify, document, and prioritize existing processes for network consolidation,
b. Assess existing processes to determine improvements or additional consolidation of the processes,
c. Identify and develop any new processes that would improve network consolidation,
d. Apply the processes on a selected big deck amphibious ship,
e. Retrieve all relevant technical data (such as mesh diagrams, IP/Mac address, etc.) and
f. Provide modeling & simulation using OPNET or other approved modeling tool to justify assertions.
g. Identify tools and techniques applicable to defined network consolidation.
h. Identify opportunities and schedule activities to coordinate continuous improvements to processes.